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REMARKS ON GUN-SHOT WOUNDS.

BEING THE SUBSTANCE OF A LECTURE DELIVERED SOME YEARS SINCE AT THE MASS.  
MEDICAL COLLEGE.

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[Communicated for the Boston Medical and Surgical Journal.]

GUN-SHOT wounds are produced by obtuse bodies, generally of a metallic nature, projected by fire-arms. They have usually the form of punctured wounds, and their surfaces are always contused. It is of course impossible that they should heal by the first intention. Suppuration must take place, and there is always danger that the inflammation will be excessive.

So great is the sloughing that is ordinarily produced by wounds of this character, that for some time after the invention of gun-powder, it was supposed that the mischief arose either from the parts being burned, or from the balls having been poisoned.

It is now well known, that however great may be the velocity of the balls, they do not acquire any perceptible degree of heat, and it is also well understood that there is nothing poisonous in the ingredients of which gun-powder is composed. The severe injury which is produced by musket balls, is attributable to their obtuse form, and the great velocity with which they are thrown. These are sufficient to produce a violent contusion and laceration of the injured parts.

As more correct views are now taken of the nature of these wounds, so also a more correct method of treating them has been adopted. For this we are in part indebted to the celebrated Ambrose Paré, whose practice was much less severe than that of his predecessors; but Mr. Hunter must also be regarded as a great reformer on this subject, as well as in most others connected with surgery.

According to him (and no one who has given the subject the  
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slightest attention can doubt the propriety of the distinction), gun-shot wounds will vary according to the kind of body which is projected and which produces the wound, the degree of velocity with which it is projected, and the nature and peculiarities of the injured part. The bodies that produce the wound are, for the most part, musket balls, though it is sometimes caused by cannon balls, or pieces of shells, and, on board of ship, by splinters of wood. Even when it is produced by musket balls, the injury is occasionally very much aggravated by the foreign bodies which are carried by them into the wound. Pieces of cloth are often driven in by the balls, and great mischief is sometimes caused, when the bone is fractured, by some of the splinters.

When the velocity of the ball is small, the injury, on several accounts, is not likely to be so severe as when it is greater. The contusion and general violence done to the soft parts are less, and the bones, too, are not so likely to be fractured. But if the velocity of the ball is merely sufficient to fracture the bone, it is more apt to be splintered than if the velocity had been very great; for in this case the ball passes directly through the bone, and, as it were, takes a piece out of it. But this, after all, depends very much upon the resistance which the bone makes to the ball, the hardest bones being the most frequently splintered.

If the same extent of injury be produced by two balls, moving with different degrees of velocity, the wound made by the ball with the greater velocity will require the longer time to heal. This can only be accounted for on the supposition that the parts are more contused in one than in the other case, and that consequently the sloughing will be greater. It is said that when a ball passes through a part, the orifice at which the ball comes out will heal sooner than that at which it enters; it having lost some of its velocity in its passage, it cannot, of course, inflict so great a degree of injury.

Gun-shot wounds are more or less severe according to the parts which are injured. Those affecting the external integuments and muscles are the least important; those which are complicated with injury or fracture of the bones more so, and those are the most serious which penetrate some of the larger circumscribed cavities. These last also are of two kinds; one of which merely penetrates the cavity, and the other in which some important viscus contained in it is injured.

Gun-shot wounds, from the degree of contusion that always attends them, do not usually bleed much, unless some large artery is cut off. The amount of hæmorrhage, however, is very different in different cases, owing to the manner in which the wound is produced. If the artery be cut directly across, and this be done by a ball that is moving with great velocity, it will bleed freely; but if it be bruised and in some degree torn, it will bleed much less. It occasionally happens that though the bleeding may be trifling

at the time of the accident, it comes on profusely some time after. This arises from the injury which has been done to the artery, producing a sloughing of its coats, and the separation does not take place till several days after the wound has been received. The deadened parts are usually detached from the sixth to the fifteenth day after the receipt of the wound, and the greatest danger of hæmorrhage is consequently between these periods. The patient should, of course, be carefully watched till this has taken place; it may occur in the night, and if proper measures have not been adopted, he will bleed to death before any aid can be afforded him. If the hæmorrhage proceed from an internal artery, nothing, of course, could be done; but if it be one in either of the extremities, there would be no difficulty in controlling the bleeding at the time, and the vessel could be afterwards tied or the limb be amputated, as the circumstances of the case might seem to require.

The direction of gun-shot wounds is sometimes very singular, owing to the strange course which the ball takes. When the velocity of the ball is small it is easily diverted from its course, the soft parts alone are then sufficient to do this. There are other circumstances also that have an influence on its course; such as its form and direction, the position and the nature of the parts through which it passes; or, in other words, the degree of resistance it offers to it. Many curious cases are related of the direction which balls have taken, some of them passing nearly around the body, and coming out almost at the same spot in which they entered. Balls have been known to enter the integuments, over the os frontis, and go round the cranium to the occiput. The same thing has been met with in the thorax and the throat.

No credit is now given to the opinion that was once entertained, that the body can be seriously injured by the wind of the ball. Contusions often take place, which were attributed to the commotion produced in the air by the rapid motion of the ball through it. They were also attributed to electricity, supposed to be generated by the violent friction of the ball in the bore of the gun, and communicated by the ball to the injured part. But there is no foundation for this theory, for metallic substances do not become electric by friction. The truth is, that these injuries, which are frequently called wind contusions, are caused by the ball itself. They may arise from the oblique direction in which the body is struck by the ball, or the circumstance that it is not struck at all till the ball is spent.

In the *treatment* of gun-shot wounds of the extremities, the first thing to be decided is, whether the operation of amputation must be performed. If the muscles and other soft parts be extensively torn and contused, if the bone be shattered, the joint opened, the principal artery and nerve of the limb divided or seriously injured, and the limb itself cold, no doubt can exist as to the expedi-

ency of amputation, and delay would jeopard the life of the patient. But there are frequent cases of much less severe injury, where it is not so easy to come to a decision as to the propriety of an operation, and in which the exercise of great coolness and good judgment is required to arrive at a correct opinion. It often happens, from the very nature of the wound, that the extent of the mischief is not known at the time of the accident, but when the sloughing process has separated the dead from the living parts, it will be found, that if the limb could be preserved it would be useless, and that the attempt to do it would endanger the life of the patient.

In doubtful cases we must be guided by the particular circumstances of each case, and the constitution of the individual. No general rule can be laid down that would be applicable to all.

When there is no doubt as to the propriety of amputating, the operation should not be done while the system is in a state of languor and depression, before it has recovered from the shock of the accident; but it should not be delayed after reaction has taken place. This usually happens in from two to six hours after the receipt of the injury; it is indicated by a change in the countenance, by the subsidence of the nervous symptoms, by the pulse, which before was rapid and small, now becoming firm and moderate, and by the coming on of the pain of the wound. The experience of the best military surgeons has shown, that patients who are in this condition have a good chance of recovery. In fact, Mr. Guthrie says, that "he will recover in the proportion of nine cases out of ten in any operation on the upper extremity, or below the middle of the thigh, without any of the bad consequences usually mentioned by authors as following such amputation."

There can be no doubt, that much of the fatality that ensues after amputation from gun-shot wounds, is attributable to the want of discrimination in the surgeon; in not examining, and not attending to, if he does examine, the particular condition of each patient. Many unquestionably lose their lives, because the operation is performed before reaction has come on; when the nervous system is depressed, the circulation languid and feeble, and the skin cold. In this state, any addition to the causes of depression must prove fatal, and yet how frequently are limbs amputated while the patients are in this state!

When amputation is not deemed necessary, the next inquiry is as to the proper dressing to be applied to the wound. In this respect, a great improvement has taken place in modern times, by which the sufferings of the patient are materially lessened and his chance of recovery much increased. The first step towards improvement was made by Ambrose Paré, and may be truly said to have been the result of accident. Up to this time, it was the universal practice, from a belief in the poisoned nature of gun-shot wounds, to dress them with burning oils.



These boiling oils were applied for the purpose of deadening the parts still more, and in this way prevent the action of the poison, with which the wound was supposed to be impregnated.

Parè accompanied the French army into Piedmont, and was with them at the siege of Turin. Many of the soldiers were wounded, and his mind being impressed with the belief of the poisonous character of the wounds, he dressed them in the barbarous manner then in use. "At length," he says, for I give you a translation of his own words, "my oil being expended, I was compelled to use instead of it a digestive liniment, composed of the yolk of eggs and the oils of rose and turpentine. But I did not sleep well that night, fearing that I should find in the morning those, whom I had dressed with this liniment, dead from poison. I rose therefore very early and visited them, and found, contrary to my expectations, that they had slept well, been free from pain, and that their wounds were neither swelled nor inflamed. But those in whom the boiling oil had been applied, were feverish, and in great pain, and the neighborhood of their wounds much swollen. I determined then that I would never burn again, in the cruel manner that I had heretofore done, the poor fellows who should be wounded with fire-arms."

A circumstance of this kind was not lost on a man like Parè; it taught him a lesson to which he is indebted for his success in practice, and for the reputation which he has enjoyed. He learned from it the value of mild dressings in cases of gun-shot wounds, and he thus spared his patients much unnecessary suffering, and had also the satisfaction of seeing the wounds heal much more rapidly. But though this was a vast improvement, whether we regard the comfort or safety of the patient, we are indebted to Mr. Hunter for another, and that is, the strong reprobation which he gave of the indiscriminate dilatation of gun-shot wounds, which was practised till his time.

It was thought that by doing this, the wound could be converted into an incised one, and a freer exit, at the same time, afforded to any foreign substances that might have been forced into it. But the character of the wound is not changed by an incision, and in consequence of the contusion and sloughing which it occasions, the wound is much larger than the ball which produced it, and a free passage is thus given to the matter or other extraneous bodies it may contain. These and other considerations led Mr. Hunter to the conclusion that dilating gun-shot wounds, "as a general practice, should be rejected at once, even," he adds, "were it only for this reason, that few gun-shot wounds are alike, and therefore the same practice cannot apply to all."

This indiscriminate dilatation of those wounds is wholly at variance with our practice in all other cases, which is, that nothing of importance should be done to wounds in their first stages, but

to promote, if the circumstances of the case will admit of it, union by the first intention. It is generally admitted now, that gun-shot wounds should only be dilated when there is some plain and beneficial object to be accomplished by it.

It is no doubt proper to extract, as early as possible, as many foreign substances as can be removed without causing great violence to the parts and giving the patient much pain. By so doing, a great source of irritation is removed; the nervous symptoms will probably be less severe; the inflammation that supervenes will not run so high, and the suppuration will be less profuse. But these foreign bodies are only to be removed when they are near the orifice of the wound, and are easily come at; and it should be recollected that much searching for them produces a great degree of irritation in the wound. When they cannot be removed without this, they should be allowed to remain, unless they are pressing on some important nerve, or artery, or organ, whose functions cannot be disturbed without producing dangerous symptoms. But if this should not be the case, they should be left to the natural processes, and they will probably be thrown out when the sloughs separate, or when the suppuration is well established. It should be recollected, too, that a smooth, round body, like a bullet, will often remain in the body without producing any inconvenience, and lead is said to be less irritating than any other foreign substance. It is therefore by no means necessary to attempt, in every instance, the extraction; it may be suffered to remain, if it cannot be easily removed, and does not incommode the patient.

From the nature of gun-shot wounds, it is, of course, not to be expected that there can be union by the first intention. A tedious process must be gone through with before the healing can be accomplished. The deadened parts must separate from the living, and the wound must be healed by suppuration and granulation. If an extremity be the injured part, and the bone be badly broken, all the loose splinters must be carefully removed, should it have been decided that amputation should not be performed, as they produce a great degree of irritation, and add very much to the danger of the case. If there should be any considerable bleeding, which is not a very frequent occurrence, the vessel must be tied at once. The limb should be laid in a splint, a mild dressing applied to the wound, and the whole of the limb should be covered with an eighteen-tailed bandage. The dressing may consist of simple cerate on dry lint; and the accident should, in fact, be managed very much in the same way as a compound fracture.

Some linen cloths should be placed under the bandage, and these should, for the first few days, be kept constantly wet with a lotion of the acetate of lead or cold water. All military surgeons of the present day are of opinion that these cold applications are of great service in preventing the inflammation from becoming ex-

cessive, and it is fortunately a remedy that can be obtained under all circumstances.

They are also equally agreed in condemning the use of tight bandages, or anything that shall compress the limb. It is believed that mortification has frequently been induced by the improper manner in which the wound has at first been dressed. The bandages should be tight enough only to keep the dressings in place, and great allowance should be made for the swelling that usually comes on. The limb should be placed, if possible, in a position comfortable to the patient, and be allowed to remain at perfect rest.

In young, robust and healthy persons, when the shock of the accident has not been great, and the system does not seem to be depressed by it, and much blood has not been lost, it will be proper to take some blood from the arm, if the pulse be good; on the contrary, stimulants should be administered if there be symptoms of great depression and languor, and venesection, if done at all, should be deferred until reaction has taken place. Even when general blood-letting is not admissible, the application of leeches to the neighborhood of the wound is often highly useful in allaying the inflammation, and the same treatment may be adopted for this purpose as was recommended when treating of inflammation.

Usually, at the expiration of twenty-four hours, swelling and the other inflammatory symptoms come on in the part, accompanied with a constitutional affection of a febrile character. In cases of fracture, the cold lotions may still be continued a few days longer; but where the bone is not broken, the pledget of simple cerate or the dry lint, as the case may be, should be removed, and a mild poultice applied, and in fact this is the best application in every instance, after suppuration has commenced.

It is necessary to administer gentle saline cathartics occasionally, and to give opium, if the pain be severe. The diet must be varied according to circumstances. During the inflammatory stage, it should consist wholly of vegetables, and those of the mildest character. But when the suppurative process is established, the system requires support, and animal food of a digestible kind may be allowed.

Should mortification take place, notwithstanding all these precautions, amputation should be performed at once, without waiting, as was formerly done, for the line of demarcation to be established between the dead and living parts. You may recollect that I stated, when treating of mortification, that it was not necessary to do this, in those cases of mortification that came on from accidents.

The suppuration is usually in proportion to the extent and violence of the injury; and in cases that are going to terminate favorably, it gradually diminishes, after the sloughs have separated, the cavity fills up with healthy granulations, and the bone, if it has been fractured, becomes firmly united.

But gun-shot wounds do not always take so favorable a course; it sometimes happens that the secretion of pus is excessive, and that all the means that are employed for the purpose are of no avail in checking it. The consequence is that the system becomes enfeebled, the patient is wasted, hectic fever and night-sweats come on, and a fatal termination is threatened. It requires great judgment to determine how long an attempt shall be made to save the limb without putting at hazard the life of the patient. The state of the limb, as to the extent of the injury, may aid us somewhat in coming to a decision; for we should be much more ready to amputate, if the limb was so much injured that it could be of but little use to the patient, if he should recover, than if the wound was such, that there was a prospect of restoring the part to its former usefulness.

It frequently happens that a cannon ball carries off a limb, and a question arises, what is the surgeon to do under such circumstances? Nearly, if not quite, all army surgeons of the present day, would recommend immediate amputation of the stump, after reaction has taken place. In this case you have a clean cut surface, instead of an irregular contused one, and the stump consequently will heal much better. The muscles, from the very nature of the accident, are torn in the most irregular and unequal manner, and the delay of the operation endangers the life of the patient.

You will thus perceive that gun-shot, are to be treated on the same general principles as all other wounds, and that there is no foundation for the opinion that they have a specific character, which requires a peculiar mode of treatment. They are merely contused wounds of an aggravated kind, owing to the velocity of the body by which they are produced, and their great depth, when compared with their external opening. There is another circumstance which frequently increases their severity, and that is, that foreign bodies are often carried in by the ball, as cloth and other articles of the dress of the individual who is wounded.

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#### MECHANICAL APPLIANCES.

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MESSRS. EDITORS,—I was consulted some time since in a case of perfect uselessness of the right leg from a former affection of the knee-joint. The patient had walked on crutches for twenty years. Of late she had begun to feel a numbness in the hands and a weakness in the arm, evidently from the effect of the crutch pressing upon the axillary plexus of nerves. This was a serious matter to her, as her needle was her means of livelihood. My opinion was sought as to whether the knee was in such condition as would enable it to support the weight of the body, if an artificial limb could be adapted to it. There had been much disorganiza-

tion and displacement of parts by the old disease; the patella was pushed aside, the ligaments greatly absorbed, and the tibia partially dislocated. Nevertheless, the present condition of the parts seemed perfectly healthy, and there was no tenderness. I therefore encouraged the hope that a good support would be furnished by the end of the femur when the leg was flexed. A few days since, I saw the patient, and found her walking without crutches, and with great ease. Acting upon the assurance I had given her, she had applied to Messrs. Palmer & Co., who had fitted an artificial limb for her on their plan, but with certain modifications to suit the case. When walking, the real but useless limb is flexed or projects behind at a right angle—which, however, the happy use of crinoline entirely conceals, and the artificial one takes its place as a support, flexing at a joint just below the real knee. When sitting, the natural limb drops down just behind the artificial one, which is somewhat hollowed to receive it.

I consider this case well worth mention, from the trouble the patient was experiencing in the increasing pain and weakness of the arms, and the numbness of her fingers—which, had it developed, would have incapacitated her from her daily occupation. This trouble has now ceased entirely. The use of crutches with her, and I find with many others, produces severe fatigue of the chest, and in this particular this person has experienced great benefit. She mentioned incidentally, that at one house where she staid, she ascended seventy steps to her room without fatigue or inconvenience. In a male case, the same adaptation could be made, but in such an instance amputation might be desirable to remove the inconvenience and ungainliness of the useless and supernumerary limb.

W. E. C.

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#### CASE OF CYANOSIS.

SINGLE VENTRICLE; PULMONARY ARTERY STRICTURED AT ITS ORIGIN.

ANTOINE LAUSADET, born on the 14th March, 1852, was admitted into the Hospital on the 15th, where he remained until the 30th of the same month, at which period he was given out to nurse in the Department of the "Clarente Inférieure." The notes taken by the Inspecting Physician as to the child's condition, at the time of admission, could not be found. The nurse reported that the infant, during the whole time she had charge of it, never kept its bed, although its health seemed to demand it. After the least fatigue, and especially after walking, its lips and hands became blue, and it appeared oppressed. This condition augmenting from day to day, she was compelled to see the Inspecting Physician, who sent the child to the Hospital on the 11th May, 1859. The notes of this physician pointed out that the child was suffering under aneurism.

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At its admission into Hospital, the child was submitted to our examination. It was seven years of age, large enough, height 3 feet 3 inches, skin fine and white, hair flaxen, eyes blue, temperament lymphatic, of delicate constitution, and slightly developed muscular system, especially in the lower extremities. His appearance was mild, docile, and of timid expression, intelligence ordinary. The skin of the face was deeply tinted blue; the depth more marked on the lips, eyelids and ears. The feet and hands were cold and of a livid blue, especially the fingers and toes which were long, slender, and thickened at their extremities; the nails presented the olive-shaped conformation. This blue tint disappeared nearly entirely for a while after long repose, and chiefly in the morning; but it became more marked during digestion, coughing, walking, or cold, to the latter of which the child was peculiarly sensitive. The little patient seemed pleased with his bed, in which he always doubled himself up, the knees to his chin.

The chest, thin and contracted superiorly, was remarkable for its sternal projection. There was well-marked dulness in percussion, not extending below the level of the fifth and sixth ribs. The pulsations of the heart, violent and tumultuous, were easily perceptible. Auscultation afforded a dull bruit (*brouissement* sound) around the region of the heart. It was difficult to determine whether this sound preceded or followed the first of the heart sounds, which were obscure and apparently confused. He felt pain in the same region, which occasionally impeded his respiration, and which always preceded the attacks which we shall shortly mention. A distinct *bruit de souffle* was heard in the carotids; the pulse was small, frequent, and irregular, from 90 to 100 in the minute.

The respiration was short, cough frequent with distinct dyspnoea. Auscultation of the lungs yielded nothing of importance, except an acceleration of the inspiratory movements from 30 to 32 per minute. Two or three times a day he experienced a sensation of suffocation with extreme dyspnoea, and a hard and fitful cough. The face became completely blue, and asphyxia seemed imminent. The pulse then became filiform or thready and hard, beating 110 or 120. After the attack, which usually lasted five or six minutes, and which ended in yawning and sobbing, he experienced an undefinable uneasiness, lasting at least half an hour. The attack was always foretold by the patient, who felt, as we have stated, a severe oppression in the præcordial region ending in insensibility.

The headaches became frequent, and were always severe after the attacks. There was but little appetite, but digestion usually perfect. His voice was feeble. He seemed to avoid exercise, remaining willingly all the day seated on a chair or his bed. His extremities had a marked tendency to coldness, the temperature of his body, even, being lower than that of a child of the same

age; thus the thermometer placed in the palms of the hands, in the armpits, and under the tongue, gave for five days the following results.

Date.	Temperature of Air.	Temp. of the room.	In the hand.	Thermometer placed in the armpit, under tongue.		Pulse.	Respiration.
June 16	55.4	60.8	96.8	98.6	100.0	108	31
17	53.6	59.9	97.7	99.5	102.2	106	33
18	59.7	62.6	95.0	96.8	99.5	102	32
19	55.9	60.8	96.8	97.7	100.4	101	31
20	53.6	59.0	94.1	95.0	99.5	96	30

(In the original paper the degrees are given in the centigrade scale. In the above table we have reduced them to Fahrenheit.—Ed. B. A. J.]

The foregoing results approximate closely to those of Doctors Farre, Tupper, Nasse, and Hein, in analogous cases.

The dyspnœa, the cough and the attacks of suffocation became more and more frequent, and the child became gradually weaker. Dr. Gintrac, Director of the School of Medicine, and Dr. Bitot, a Colleague at the Hospital, saw the child, and having examined him with great care, admitted thoroughly the nature of the disease and its symptoms.

In the month of September he could scarcely move himself; the least effort produced attacks of suffocation, which of themselves became more frequent, especially towards the evening. The headache persisted, the cough was almost continual, and the emaciation progressed. His senses became weakened, the skin became dry and rough, the pulse more and more frequent, 105 to 115 and thready; his appetite failed, diarrhœa supervened, the voice became weaker, and the perception of sounds less acute.

During the month of October, these symptoms still further increased, the little patient became confined to his bed entirely; the excretion of urine and fœces became involuntary, the œdema of the lower extremities increased, the cough became more frequent, the pulse almost imperceptible, and the heart movements weaker.

On the 10th November, he contracted measles, under which the patients in the two adjoining beds were suffering. The cough and dyspnœa augmented considerably, and on the 18th of the same month, about 2, P.M., the little patient gently expired.

The treatment adopted in the case was palliative. We contented ourselves with sustaining the patient's strength by a suitable regimen, and retaining round his person a uniform temperature. The cough and attacks of suffocation were combated by sedatives and gentle antispasmodics.

A necropsy was made twenty-six hours after death by Mr. Cuillé, Interne of the Children's Hospital, in presence of M. Le Barillier, Chief of the Medical Staff, and M. Bruny, Interne of the Foundling Hospital.

*External appearances.*—Little cadaveric rigidity, skin blueish color, especially marked in the extremities, lips and nostrils, emaciation considerable, the muscular and osseous system little deve-



loped; œdema of lower extremities, the veins of all parts gorged with dark and thick blood, especially the jugulars.

*Head*.—The veins of the meninges of the brain, the vertebral arteries, the internal carotids, were distended with blood of a violet color. The brain itself was firm, and on cutting it by slices, the white substance was found studded with innumerable red points.

*Thorax*.—Lungs healthy, but small and collapsed. The thymus gland was very large. I do not remember having seen it so large, even in an infant born before time. The pericardium contained from one ounce and a half to two ounces of a yellow colored serosity.

*Heart*.—Walls thick, filled with black blood and fibrinous clots, as well as the origin of the large vessels. Having been removed and carefully measured, it yielded the following dimensions:—

From the apex to the base of the heart,	2.44 inches.
Transverse diameter,	2.08 "
Circumference of ventricular portion at widest part,	29.92 "
From the uppermost part of the ventricle to the centre of the base anteriorly,	2.52 "
From the uppermost part of the ventricle to the centre of the base posteriorly,	2.12 "
Distance in a straight line between the right and left extremities,	1.97 "

There was no median furrow either anteriorly or posteriorly, nor was there any sloping of the upper part of the heart.

The ventricular portion was cut through longitudinally. There was found no interventricular septum.

The thickness of the ventricular wall was considerable. The columnæ carneosæ were numerous and very powerful.

The pulmonary artery arose from the right extremity of the ventricle, with which it communicated by a narrow opening; the sigmoid valves presented nothing worthy of notice. The calibre of the artery was however less than usual. The aorta was dilated. It arose from the centre of the single ventricle, between the right auricle which was much dilated, and the left auricle which was rather contracted. The right auricular ventricular opening was larger than usual, but its valves presented neither ossification nor hardness. The arrangement of the venæ cava superior and inferior, and the pulmonary veins, presented nothing worthy of note. The foramen of Botal was obliterated, as well as the ductus arteriosus.

*Abdomen*.—The abdominal viscera presented nothing worthy of note, the liver only being larger than in the usual normal condition. The abdominal veins were slightly injected.

This case is singular on several accounts. Cyanosis, notwithstanding the praiseworthy labors of MM. Gintrac, Lewis and Ferrus, is still imperfectly understood. Two opinions are now

entertained, the one which attributes the disease to the mixture of two bloods (Corvisart and Gintrac) and the other which regards it as due to an interruption to the circulation of greater or less magnitude. (Ferrus, Louis, and Grisolle.) Facts seem in favor of the opinion entertained by Gintrac, in an interesting paper by him.\*

In this paper or memoir Mr. Gintrac has collected 53 cases of cyanosis exhibiting anomalies of the heart and great vessels.

The case, now narrated, closely resembles cases 5 and 6 of that memoir, but differs in having but a single ventricle. The conformation of the heart of reptiles has been rarely observed in man, and it ought to produce in him certain phenomena of the peculiarities of the life of that class of animals, and especially the want of calorification and consequently a tendency to coldness.

The mixture of the two bloods and the complete want of oxygenation are inevitable, and appear, in this case as well as in three other ones observed, to be the chief cause in producing the cyanosis. We also agree perfectly in the following opinion which Mr. Gintrac expresses in the memoir or paper alluded to.

"That organic lesions of the principal circulating vessel do not constitute nor determine of themselves the Blue Disease, but that the immediate and essential cause of this affection consists in the alteration of the course of the dark blood and its introduction into the arteries." He adds a little further on, "That this alteration in its course should occur there must exist, independently of organic alterations of the heart structure, either in its organization or the mode in which the junction of the two fluids is effected, some obstacle opposing its free course in its natural channels. Then the equilibrium which ought to exist between the two sides of the heart becomes destroyed, regularity of the circulation is at an end, and the venous blood mixing itself in varying proportions with the arterial, alters more or less its purity and color, and transports throughout the organism all the disastrous influences of this disorder and deterioration."

In fine, the disease known under the name of Cyanosis, and characterized by the group of symptoms which we have pointed out, is the production only of a mixture of venous with arterial blood. If in some cases, in which the foramen of Botal has continued open, this disease has not shown itself, it is because this mixture has not taken place; on the other hand, any arrest, whether permanent or temporary, of the arterial or venous circulation, is of itself incapable of giving origin to the symptoms characteristic of this affection.—*British American Journal*, from *Journal de Bourdeaux*, January, 1861.

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\* Observations et recherches sur la Cyanose ou maladie bleue.—Paris, 1824.

## Reports of Medical Societies.

EXTRACTS FROM THE RECORDS OF THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. BY FRANCIS MINOT, M.D., SECRETARY.

MARCH 25th, 1861.—*Deafness following Mumps.* Dr. BETHUNE said he had been consulted by a man, who, three months ago, had mumps on both sides, followed by orchitis. The mumps terminated by sloughing of the parotid gland, and was followed by otorrhœa. Ten days before Dr. B. saw him, he had some pain about the head, and the next morning he became totally deaf, and has remained so ever since. The man appeared to be "run down." In the parotid regions were deep cicatrices. There was no evidence of cerebral trouble. He was ordered generous diet, alcoholic stimulants, and a blister to the back of the neck. His general condition had much improved, but there was very slight amelioration in the state of the hearing.

A similar case was reported to the Society in 1841, by Dr. Holmes. The patient was a boy, eight or nine years old, who became deaf four days after the beginning of an attack of mumps. The hearing was not restored five months afterwards, when "loud sounds, like the report of a cannon, he could hear, but not common sounds."

MARCH 25th.—*Softening of the Heart as a cause of sudden Death.* Dr. ELLIS reported the following cases of softening of the heart.

CASE I. The patient was a large, robust-looking man, 57 years of age. He had been much depressed by misfortunes in business, but, notwithstanding, enjoyed very good health until about six weeks before his death, when he was suddenly attacked with severe pain and a sense of stricture across the front of the chest. This lasted but a short time, when he felt as well as ever. He continued to have similar attacks occasionally, but of such short duration that it was thought useless to send for a physician. In the morning of the last day of his life, being again attacked, he sent for Dr. Cotting, of Roxbury, but on his arrival came forward and said that he would find nothing the matter with him, as the paroxysm had passed away. On examination, nothing unusual was found in the chest, the heart pulsating regularly, and with its normal frequency. In the evening, he sat up and played chess until nearly midnight, fearing another attack. He was troubled by pain through the sternum, and oppression about the chest, from midnight until four or five o'clock in the morning, when he died. His wife left him standing, while she went to procure something in another part of the room, when he was observed to slide into a chair and thence to the floor. A neighboring physician was sent for, who pronounced him dead. He had never been confined to the house.

The organs were all healthy, except the heart, which was flaccid, of a dull red color, and so soft that it broke down under the traction used in its removal. It could be perforated with the greatest ease on pressing it between the thumb and finger. The layer of fat had encroached upon the wall of the right ventricle, the muscular substance of which was very thin.

On microscopic examination, the transverse striæ of the muscular substance were found to be very indistinct, and the fibrillæ had a somewhat granular appearance, but contained very few if any of the globules which are usually found in well-marked cases of fatty degeneration.

CASE II. This patient was a convict in the State Prison, 29 years of age. Dr. Bancroft, the physician of the prison, stated that he had had several attacks of faintness, or dyspnœa, which attracted but little attention. Finally, on the day of his death he ate his dinner as usual, returned to the workshop, seated himself, fell as in a fainting fit, and died.

On examination of the brain, and all the other organs, nothing abnormal was found, except in the heart, which was of a dull-brown color, and perforated with the greatest ease by compressing it between the thumb and finger.

The record of the microscopic examination was not made at the time, but the appearances were probably the same as those in the previous case.

CASE III. Dr. AINSWORTH gave the history of the case.

A gentleman, 79 or 80 years old, regular and temperate in his habits, and previously healthy, began, about six months ago, to have pain in the region of the sternum, at intervals, after exertion or excitement, without acceleration of the pulse, or apparent obstruction of the circulation, and without physical signs of disease in the heart or lungs. The attacks became more severe, more frequent, and of longer duration, lasting 15 or 20 minutes. The evening of March 23d, he was as well as usual at 10 o'clock, and took some cider and water, to relieve a craving for acids. He went to bed and slept; but at 3, A.M. he was seized with a very violent paroxysm, which he was aware was the precursor of death. He was groaning, pale, cold, pulseless and covered with sweat. He had a small dejection, and tried ineffectually to vomit. He died in less than an hour from the beginning of the attack.

Dr. ELLIS gave the following account of the autopsy:

The head was not examined. The lungs were somewhat œdematous, but in other respects healthy. The substance of the heart was light-colored, and quite soft, yielding very readily to pressure between the thumb and finger. One of the coronary arteries was ossified, but pervious. On microscopic examination, the striæ of the fibres were found to be very indistinct, but there was no well-marked deposit of fat. The spleen was very soft, and resembled a mass of loose, recent coagulum. The kidneys had a decidedly granular appearance, but this was partly owing to the red and white mottling of the surface. On microscopic examination, the tubuli were found to be filled with granular matter and minute fat globules. The other organs were sufficiently healthy.

Dr. Ellis remarked that these cases were reported for the purpose of showing at least an apparent connection between softening of the heart and sudden death. They are to be carefully distinguished from those in which disease of various kinds, or fatty degeneration, has given rise to the change. Förster, in his "*Specielle Pathologische Anatomie*," states that a diminution of consistence is met with in many cases of atrophy, in purulent pericarditis, in typhoid and puerperal fever, scurvy, and as a cadaveric change. It is not very marked in any of these cases, and is not caused by any essential textural change, and is in itself unimportant. That which results from fatty degeneration and inflammation of the substance is more important, since the change may be so great as to give rise to rupture.

Old and recent authors describe a specific process under the name

of softening of the heart, but all the cases cited may be included under one of the above-mentioned categories. The majority were found in cases of putrid typhoid, in the puerperal state, or in scurvy; and the accidentally relaxed, discolored and softened hearts were supposed to have exerted an important influence upon the symptoms. But all these observations are in the highest degree doubtful. Bouillaud, Rokitsky and others, know nothing of such a specific softening."

Our cases are certainly different from any alluded to above. The patients were of various ages, and one of them only 29. None of them were laboring under other acute disease, and the change was certainly not the result of decomposition. The microscopic evidence of fatty degeneration was wanting, but the appearances were decidedly abnormal.

It is therefore highly important that the subject should be farther investigated, and the result may be that the term *angina pectoris* will be even less used than at present.

Dr. JACKSON observed, that softening of the heart was by no means peculiar to old age. He had seen a marked case of it in a child who had died of some acute disease. The most complete specimen of fatty heart he had ever seen came from a sheep, which had exhibited no symptoms of disease before being slaughtered.

APRIL 8th.—*Obstinate Vomiting terminating in Death—Disease of the Kidneys.* Dr. ELLIS reported the following cases:—

CASE I. The patient, an unmarried woman, 24 years of age, was under the care of Dr. Windship, of Roxbury. She had always been subject to what were called "bilious turns." Her last illness commenced eight weeks before her death. During this time, the prominent symptoms were almost constant, acute burning pain in the renal and hepatic regions, great constipation, loathing of food, continued nausea, and frequent vomiting of the small amount of sustenance she was persuaded to take. After the passage of two biliary calculi, which occurred during the third week, the nausea abated for a day or two, but it then returned, and continued until a few hours previous to her death. The only relief from pain and nausea, was for a few hours after copious emesis. The urine was once examined and found normal. She died on February 10th, 1861.

*Autopsy.*—Head not examined. Lungs and heart normal. The liver was lighter colored than usual, and fatty, the cells being distended by a large number of fat globules. The stomach contained some dark brown liquid, but the mucous membrane was normal. The intestines showed no signs of obstruction. The ileum was opened in several parts, and found to contain a thick, reddish liquid. The kidneys were lighter colored than usual, and their tissue had a coarse appearance. Still, the change was not very marked to the naked eye, and the existence of disease could not have been positively declared without the aid of the microscope. With the latter, however, the tubuli were found to be crowded with minute fat globules. Other organs normal.

CASE II. The patient was a nurse, 47 years old, who had been under the care of Dr. Mason, of Brighton. In the latter part of November, she experienced an uncomfortable sensation in the epigastrium, "like that of food falling into the wrong place," as she expressed it. Soon after, she was confined to her bed with what appeared to

be pleurisy. After being under the care of her physician in Brighton for a month, she fell into the hands of a "clairvoyant," who pronounced her disease to be a dryness of the mucous membranes. The bowels were much constipated. Five weeks before death, Dr. Mason took charge of her. She was then troubled with constant vomiting, neuralgic pains and numbness. Bismuth, and a pill of conium and valerianate of zinc, were prescribed, but the first pill was immediately vomited with great distress, and for three weeks nothing whatever was retained. She was seen in consultation by Dr. Jacob Bigelow, but no positive opinion could be arrived at concerning the nature of the disease. There was no tumor nor other unequivocal sign of cancer. In about three weeks, the disposition to vomit was much less, though she always vomited several times a day, principally thin, yellow fluid, no blackish matter being ever seen. Three days before her death, she became violently delirious, and was only controlled by ether. During the last four weeks, she was much troubled by a sore mouth and tongue. The urine was not examined.

At the examination, nothing remarkable was noticed in connection with the brain, except that the subarachnoid fluid was more abundant and the sulci wider than usual. The left lung was universally adherent, the false membrane being from half a line to a line in thickness, and not old. The inner surface of the stomach was covered with a layer of tenacious, white mucus. Some cadaveric softening of the large extremity, but no other lesion. Intestines, externally, normal. The liver was lighter colored than usual, and fatty, the cells containing many fat globules. The capsules of the kidneys were removed with unusual ease. The organs themselves were of the ordinary size, but more flaccid than usual. The cortical substance was of a light brown color, coarse and loose. On microscopic examination, the tubuli were found filled with minute globules and granules, and probably diseased epithelium, as a large number of free cells were seen, shrunken, deformed and granular. In the cones there was much healthy epithelium. Other organs normal.

In neither of these cases was there any suspicion of disease of the kidneys, but in both there was a remarkable correspondence between the symptoms, or at least the most prominent one, vomiting, and the anatomical change.

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## THE BOSTON MEDICAL AND SURGICAL JOURNAL.

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BOSTON: THURSDAY, JUNE 6, 1861.

ANNUAL MEETING OF THE MASSACHUSETTS MEDICAL SOCIETY.—In consequence of the distraction occasioned by the war, as well as of the absence of the usual solace of cold salmon and lemonade, the Fellows of the State Society did not come up on their annual pilgrimage with that alacrity that has hitherto marked this great Æsculapian feast. We do not remember to have seen at any annual meeting for many years so meagre an attendance. Notwithstanding, however, the lack of numbers, there was fortunately no corresponding deficiency in interest in the proceedings. The meeting took place at ten o'clock at

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the Marlborough Chapel, the President, Dr. John Homans, in the chair. It appeared from the record of the Secretary that forty-three persons had joined the Society since the last annual meeting, and fifteen had deceased. The papers presented were, one on zymotic diseases, by Dr. E. Cutter, of Middlesex East District; and one on the relief of pain by subcutaneous injections, by Dr. A. Ruppaner, the reading of which was deferred in consequence of the absence of the author.

Dr. Lincoln exhibited an enormous tumor, which had been recently removed at a post-mortem examination from the abdomen of a male patient under his care, a full report of whose case will shortly be published.

Among other items of business the following resolutions, presented by Dr. Jarvis, of Dorchester, setting forth the importance of the formation of a sanitary commission, were adopted:—

*Resolved*, That the Massachusetts Medical Society petition the Legislature for the establishment of a Board of Health of vital statistics, for the following purposes:—

First, To have the general oversight of the sanitary interests of the Commonwealth, as the Board of Education and Agriculture have over the interests intrusted to their supervision.

Second, To have charge of the registration law of births, marriages and deaths, and to prepare the annual report.

Third, To have charge of the State census, and to make the decennial report.

Fourth, To have authority to visit all the public medical and sanitary charitable institutions in the Commonwealth and elsewhere, which receive patients from this State, and make a general annual report of their condition to the Legislature.

*Resolved*, That every member of the Medical Society be requested to use his influence with the Senators and Representatives from his district to persuade them to support this measure in the Legislature.

*Resolved*, That the several district societies be requested to take action in behalf of this measure, and use their efforts for its adoption.

Drs. J. G. Metcalf, George C. Shattuck and George Choate were appointed a committee on scientific communications.

At one o'clock the annual address was delivered by Dr. Henry C. Perkins, of Newburyport. The subject was the Duty of the Physician and Surgeon on the Day of Battle or in War, and we much regret that the orator could not have had a larger audience to profit by his practical teachings. At its close, on motion of Dr. Hunt, of Middlesex, seconded by Dr. Spofford, of Essex, it was voted that the thanks of the Society be presented to Dr. Perkins for his "eloquent, patriotic and appropriate address."

At the meeting of the Councillors which took place on the evening previous, thirteen only out of seventeen district societies were represented. The usual business was transacted, consisting of the Reports of the Treasurer and Standing Committees, and the appointment of the Standing Committees, and election of officers for the ensuing year. From the report of the Treasurer Dr. A. A. Gould, it appeared that the outsets of the Society during the past year had been \$18,327 20, and the income \$17,190 55, leaving a balance of \$1,136 65 due the Treasurer. In accordance with the vote of the Council last year, the sum usually devoted to an annual dinner is to be devoted to the payment of the debt; added to which, the interest on the legacy of \$10,000 will greatly diminish it.

The officers of the last year were re-elected. Dr. Henry J. Bige-



low was chosen anniversary chairman, and Dr. Henry I. Bowditch was appointed to deliver the next annual address.

On the whole, our medical anniversary, notwithstanding the absence of the important part usually performed in Faneuil Hall, passed off with credit to all concerned. We trust, however, at the close of another year, that the clouds which now threaten us will have rolled away, and that at our next annual meeting the sunlight of peace shall again have dawned on our land.

At a late meeting of the Boston Society of Natural History, Dr. J. C. White exhibited a mouse whose head was almost entirely covered by large masses of the parasite fungus *Achorion Schoenleinii*.

The growths formed dry, yellowish crusts resembling in shape kernels of popped-corn. Nothing of the head was visible with the exception of the ears and mouth. This animal was one of twenty or thirty caught during the past three months in the seed store of Curtis & Cobb, in this city, nearly all of which have had more or less of the same appearance. Even the young have exhibited it, when they belonged to mothers similarly affected. They were all killed by a cat. As is well known, this parasitic plant is the cause of the disease upon the human scalp known as *Favus*, which is characterized by the appearance of crusts exactly similar to those seen upon the mouse, and by the loss of hair. These crusts consist of minute sporules and sporangia, that is, the reproductive portion of the fungus, together with a slight growth of the mycelium. These spores coming in contact with the scalp of a child, whose head is not well cared for, attach themselves to the epithelium, or find a lurking-place in the hair follicles. There they rapidly reproduce themselves, distend the hair sacs, press upon the roots of the hair, and finally, entering into its substance, produce a discoloration and brittleness, which causes it to break off at a short distance above the surface of the scalp. This process repeats itself indefinitely if unchecked, causing general baldness, and large unsightly formations of a bad odor. The plant may also grow upon the skin of other parts of the body; but there, failing to find a lodging-place so secure as the hair follicles of the head, is easily removed, and never forms crusts of any considerable size. When seated on the scalp, it can only be cured by pulling out all the affected hairs. Its infectious nature may be proved by transplanting it from one person to another. It is, fortunately, a disease of rare occurrence, less frequently seen than the other vegeto-parasitic diseases of the scalp. Whether the disease belongs naturally to the mouse or to man, we have no means of determining; he believed it had never been observed upon any other animals than the mouse and cat.—*Proceedings of Boston Society of Natural History*.

A PATHOGNOMONIC SIGN OF SCARLATINA.—For some years past, M. Bouchut (*Journal of Practical Medicine and Surgery*) has been in the habit of pointing out in his wards a curious sign which assists in the discrimination of scarlatina from measles, erythema, erysipelas, &c. It consists in a vascular phenomenon, proportionate in intensity to the extreme contractibility of the capillaries over the part of the skin in which the eruption exists, by pressure with the nail. We refer to the enduring *white stripe* produced at will by drawing the back of the nail or any other hard substance upon the exanthematous surface, producing a white streak, which lasts one or two minutes, and sometimes more. Figures may thus be traced upon the skin, the lines of which are conspicuous from their whiteness. With a blunt probe or penholder, the diagnosis of the disease may be distinctly inscribed on the integument, and after a minute or two the word *scarlatina* disappears, when the uniform tinge of the eruption again invades the written surface.

This phenomena is observable in scarlatina only. The scarlet hue of measles is not uniform, the eruption consisting of mottled patches, with very slight elevations separated by interstices of healthy skin. In measles, the procedure we have described would produce an alternately red and white streak, enduring a much shorter time than in scarlatina. In erysipelas, in the redness induced by a mustard poultice, in solar erythema, the white line we allude to is not visible; and without attributing to this sign an undue degree of importance, it may be said to supply one more element in the determination of the characters of the eruption of scarlatina.—*Med. and Surg. Reporter.*

**NEW MEDICAL WORK.**—We learn that a work on *Placenta Prævia*, comprising its history, physiology and treatment, by Dr. William Read, of this city, is soon to appear. From the character of the papers by the same author on kindred subjects, the forthcoming book will be looked for with much interest. It is to be printed under the auspices of the Massachusetts Medical Society.

The disarrangement of materials in moving the Journal Office, has caused a delay in the issue of the present number. We hope hereafter to be punctual in sending out the numbers on the day of publication.

#### VITAL STATISTICS OF BOSTON.

FOR THE WEEK ENDING SATURDAY, June 1st, 1861.

##### DEATHS.

	Males.	Females.	Total.
Deaths during the week, . . . . .	40	37	77
Average Mortality of the corresponding weeks of the ten years, 1851-1861, . . . . .	37.0	34.2	71.2
Average corrected to increased population, . . . . .	..	..	79.04
Deaths of persons above 90, . . . . .	..	..	..

##### Mortality from Prevailing Diseases.

Phthisis.	Croup.	Scar. Fev.	Pneumonia.	Measles.	Variola.	Dysentery.	Typ. Fev.	Diphtheria.
10	3	2	4	0	0	0	0	0

##### METEOROLOGY.

From Observations taken at the Observatory of Harvard College.

Mean height of Barometer, . . . . .	29.866	Highest point of Thermometer, . . . . .	82°
Highest point of Barometer, . . . . .	30.618	Lowest point of Thermometer, . . . . .	41°
Lowest point of Barometer, . . . . .	29.110	General direction of Wind, . . . . .	S.W.
Mean Temperature, . . . . .	69°·6	Am't of Rain (in inches) . . . . .	0.8

From Observations taken by Dr. Ignatius Langer, at Davenport, Scott Co., Iowa. Latitude, 41.31 North. Longitude, 13.41 West. Height above the Sea, 729.

		BAROMETER.			THERMOMETER.			RAIN.		Mean Amount of cloud, 0 to 10.
		7 A.M.	2 P.M.	9 P.M.	7 A.M.	2 P.M.	9 P.M.	Mean Height.	Time 15 minutes.	
					Lowest.	Highest.	Mean.			
Monday,	May 29,	29.18	29.35	29.47	45	46	49	62.05	0.83	0
Tuesday,	" 21,	29.55	29.33	29.53	49	60	55			
Wednesday,	" 22,	29.53	29.40	29.26	50	68	61			
Thursday,	" 23,	29.28	29.20	29.24	59	74	66			
Friday,	" 24,	29.26	29.21	29.23	70	72	68			
Saturday,	" 25,	29.33	29.25	29.07	69	73	70			
Sunday,	" 26,	28.86	28.80	28.81	72	80	59			

**DEATHS IN BOSTON** for the week ending Saturday noon, June 1st, 77. Males, 40—Females, 37.—Accident, 6—disease of the bowels, 1—Inflammation of the bowels, 1—congestion of the brain, 3—disease of the brain, 5—bronchitis, 3—cancer, 1—chorea, 1—colic, 1—consumption, 10—croup, 3—cyanosis, 1—debility, 1—dropsy, 3—dropsy of the brain, 3—scarlet fever, 2—gastritis, 1—hemoptysis, 1—disease of the heart, 1—infantile disease, 2—Inflammation of the lungs, 4—marasmus, 3—old age, 3—paralysis, 4—pleurisy, 1—premature birth, 2—rheumatism, 1—sore throat, 1—teething, 1—unknown, 4—Inflammation of the uterus, 1—whooping cough, 1—worms, 1.

Under 5 years of age, 32—between 5 and 20 years, 6—between 20 and 40 years, 17—between 40 and 60 years, 7—above 60 years, 15. Born in the United States, 60—Ireland, 10—other places, 7.